

CLAIMS

1. An information recording apparatus which irradiates a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising:

 a light source which emits the laser light; and

 a signal generating unit which generates a recording pulse signal driving the light source based on the recording signal,

 wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

 wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

2. An information recording apparatus which irradiates a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising:

 a light source which emits the laser light; and

 a signal generating unit which generates a recording pulse signal driving the light source based on the recording signal,

 wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

 wherein a level of the recording pulse signal corresponds to a recording power having waveform distortion equal to or smaller than a predetermined value in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

3. An information recording apparatus which irradiates

a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising;

a light source which emits the laser light; and

a signal generating unit which generates a recording pulse

5 signal driving the light source based on the recording signal,

wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

10 wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility and having waveform distortion equal to or smaller than a predetermined value in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

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4. The information recording apparatus according to claim 1, wherein the recording power ensuring the reproduction compatibility is a recording power having a modulation degree within a predetermined range.

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5. The information recording apparatus according to claim 4, wherein the recording power having the modulation degree within the predetermined range is a recording power having a modulation degree equal to or larger than 60%.

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6. The information recording apparatus according to claim 2, wherein the recording power having the waveform distortion equal to or smaller than the predetermined value is a recording power having waveform distortion equal to or smaller than 10%.

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7. The information recording apparatus according to claim 2, wherein the recording power having the waveform distortion equal to or smaller than the predetermined value is a recording power having waveform distortion of 0.

8. The information recording apparatus according to claim 1, wherein the recording power having the asymmetry within the predetermined range is a recording power having asymmetry within 5 a range of -0.05 to 0.15.

9. The information recording apparatus according to claim 1, wherein the short mark is a shortest mark, and the long mark is a mark other than the short mark.

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10. The information recording apparatus according to claim 1, wherein the short mark is a shortest mark and a second shortest mark, and the long mark is a mark other than the short mark.

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11. The information recording apparatus according to claim 1, wherein the short mark is a mark having a level of no largest magnitude, and the long mark is a mark having a level of the largest magnitude.

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12. The information recording apparatus according to claim 1, wherein the recording pulse signal has a same level for all the long marks.

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13. The information recording apparatus according to claim 1, wherein the recording pulse signal has different levels for each of the short marks.

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14. An information recording method which irradiates a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising:

a signal generating process which generates a recording pulse signal driving a light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no 5 recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period 10 corresponding to a short mark.

15. An information recording method which irradiates a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising

15 a signal generating process which generates a recording pulse signal driving a light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

20 wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power having waveform distortion equal to or smaller 25 than a predetermined value in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

30 16. An information recording method which irradiates a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising:

a signal generating process which generates a recording pulse signal driving a light source based on the recording signal;

and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

wherein the recording pulse signal includes a mark period 5 for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility and having waveform distortion equal to or smaller than a predetermined value 10 in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

17. An information recording program executed in an 15 information recording apparatus including a light source, irradiating a laser light onto a recording medium to form a recording mark corresponding to a recording signal, and making the information recording apparatus execute:

a signal generating process which generates a recording 20 pulse signal driving the light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

wherein the recording pulse signal includes a mark period 25 for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility in a mark period corresponding to a long mark, and corresponds to a recording 30 power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

18. An information recording program executed in an information recording apparatus including a light source,

irradiating a laser light onto a recording medium to form a recording mark corresponding to a recording signal, and making the information recording apparatus execute:

5 a signal generating process which generates a recording pulse signal driving the light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

10 wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

15 wherein a level of the recording pulse signal corresponds to a recording power having waveform distortion equal to or smaller than a predetermined value in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

19. An information recording program executed in an 20 information recording apparatus including a light source, irradiating a laser light onto a recording medium to form a recording mark corresponding to a recording signal, and making the information recording apparatus execute:

25 a signal generating process which generates a recording pulse signal driving the light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

30 wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility and having waveform distortion equal to or smaller than a predetermined value

in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.